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Department of
**Primary Industries and
Regional Development**

Fisheries Occasional Publication No. 135

**Aquaculture of Coral, Live Rock
and Live Sand in Western Australia**

Principles and Guidelines Relating to the Assessment of
Licences for the Aquaculture of Coral, Live Rock and Live Sand in
Western Australia

September 2017

Important disclaimer

The Chief Executive Officer of the Department of Primary Industries and Regional Development and the State of Western Australia accept no liability whatsoever by reason of negligence or otherwise arising from the use or release of this information or any part of it.

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1. INTRODUCTION

To support the emerging aquaculture industry, in 2009 the former Department of Fisheries released Fisheries Management Paper 245, *Aquaculture of Coral, Live Rocks and Associated Products: Aquaculture Policy*. With an increasing interest in aquaculture of coral¹, live rock² and live sand³ since the 2009 Policy, particularly at the Abrolhos Islands, there is a need to review the principles and guidelines the Department of Primary Industries and Regional Development will use to assess applications for licences for those species, to ensure current best practice is in place.

The coral sector of the industry has the capacity to grow and will support that growth by providing an appropriate regulatory framework and a transparent, efficient approvals process.

Best practice management measures for coral aquaculture will likely evolve with changes in knowledge and experience. Accordingly, these principles and guidelines may be reviewed from time to time to ensure their currency and relevance to changes in technology, biosecurity, farming practices and other matters.

This Fisheries Occasional Publication (FOP) replaces the 2009 Policy.

2. SCOPE AND OBJECTIVES

This FOP proposes the manner by which the Department will manage coral, live rock and live sand aquaculture at land and marine based sites in Western Australia. This FOP does not apply to fisheries management activities such as restocking and stock enhancement.

The objectives of this FOP are to provide:

- guidance to applicants on the key principles the Department will consider in the assessment of applications to grant or vary coral, live rock and live sand aquaculture licences and leases; and
- information relevant to coral aquaculture in Western Australia.

3. GUIDING PRINCIPLES

Having regard for the provisions of the *Fish Resources Management Act 1994* (FRMA)⁴, when assessing applications for aquaculture of coral, live rock and live sand, the Department will use a risk-based approach and the precautionary principle.

Application of a precautionary approach means that the standard of proof used in decisions regarding the authorisation of activities should be commensurate with the potential risk to the

¹ In this paper, “coral” refers to both hard and soft corals.

² Live rock is a trade name for a substrate colonised by a range of benthic flora and fauna.

³ Live sand is either natural coral sand collected from the ocean or non-living coral sand, or limestone sand cultured to make it ‘live’.

⁴ References to the FRMA in this document will mean a reference to the Aquatic Resources Management Act, once it is proclaimed.

resource, while taking into account the expected benefits of the activities.⁵ These principles provide guidance in decision-making, but are not determinative.

Aquaculture licences are granted, varied or transferred according to the relevant provisions of FRMA; namely, s.92, s.142 and s.140 respectively.⁶ S.92 provides that, amongst other things, the Chief Executive Officer (CEO) of the Department must be satisfied that it is in the better interests of the State and the community to grant an aquaculture licence and the activities to be conducted under the licence are unlikely to affect other fish or the aquatic environment. Aquaculture leases are granted according to the provisions of s.97 of the FRMA.

Applications for the grant or variation of an aquaculture licence are assessed according to the Administrative Guideline No. 1: *Assessment of Applications for Authorisations for Aquaculture and Pearling in Coastal Waters of Western Australia*.

In making a determination to grant or vary an aquaculture licence for coral, live rock and live sand and any associated conditions of approval, the CEO will also consider the principles of a risk-based and precautionary approach set out in this section.

3.1. Number and Size of Marine-Based Sites per Licence Holder

The Department has considered the following matters when adopting a position on the number and size of sites per licence holder:

- non-performance or poor performance at any of the sites; and
- the potential for licence holders to acquire sites without undertaking aquaculture, thereby occupying waters that may otherwise be productively utilised by other licence holders.

Guidelines

Generally, there is no clear advantage to the Department or industry to prescribe restrictions on the size or number of sites or define areas that may, or may not, be used for the aquaculture of coral, live rock and live sand. It is more appropriate to require applicants to provide justification for the location and area of the site specified in an application.

- The assessment process for licence applications for aquaculture of coral, live rock and live sand will follow the guidelines applied to other aquaculture industry sectors, unless otherwise stated in this FOP.
- The Department will assess applications on a case-by-case basis and on merit.
- The assessment will take into account the availability of land or water, possible environmental and social effects of the proposed infrastructure.
- If there are multiple applications over the same area, the Department may discuss with the applicants possible amendments to their applications, to attempt to achieve an outcome that satisfies the Objects of the FRMA and meets the requirements of the applicants. If applicants are not willing to make amendments, resulting in applications

⁵ Garcia, S. 1996, *The precautionary approach to fisheries and its implication for fishery research, technology and management; an updated review*. FAO Fish. Tech. Pap. No. 350/2.

⁶ Sections 77, 133 and 84 of the ARMA respectively.

for areas that extend or lie partly or wholly over each other, then those applications will be considered competitive and assessed on merit.

- An applicant must provide justification for the area of the site.
- Performance criteria may be imposed in leases to ensure proper site utilisation, which may include proposed development objectives, including any staging, milestones and associated growth in production capacity.
- If an aquaculture operation terminates, a lease holder will be required, under a lease deed, to clean up the aquaculture site to restore it to its original condition. To ensure the cost of a clean-up will be covered, an applicant must provide a bank guarantee at the commencement of the lease. Licence holders are required to provide annual production returns.

3.2. Broodstock Collection

This subsection only refers to the aquaculture of coral and not to live rock or live sand.

Coral aquaculture requires access to broodstock for spawning (sexual reproduction) or use as donor colonies through fragmentation for hard coral, or budding for soft coral (asexual reproduction).

Applicants sourcing broodstock need to consider the risks associated with:

- moving organisms from one area to another;
- the potential impact on the genetic integrity of local populations;
- the introduction and spread of other non-native organisms;
- the introduction and spread of disease;
- the impact on the natural environment; and
- the impact on biodiversity of native species.

An aquaculture licence or lease does not authorise collection of coral from the wild for broodstock purposes.

There are three main avenues by which coral may be collected for aquaculture:

1. Source from commercial fishers;
2. Source from other aquaculture licence holders or retail outlets; or
3. Under the authority of an exemption under s.7 of the FRMA.

Guidelines

An applicant must clearly demonstrate being able to source coral broodstock from one of the three options above before a licence is granted. Further detail is provided below.

A. Source from commercial fishers

Only the holder of a Marine Aquarium Fishery (MAF) licence with coral entitlement is able to fish for coral for a commercial purpose in WA. The holder of an aquaculture licence may source coral from a MAF licence holder for aquaculture broodstock purposes.

Where coral broodstock is purchased from the MAF, the colony transferred is identified with a tag with a unique numeric code. All fragments or buds from that donor will share the tag number of the donor. As they are clones, biotechnology can verify this.

Translocation requirements outlined in part 4.7 of this FOP must also be met.

B. Source from other aquaculture licence holders or retail outlets

Aquaculture licence holders may source broodstock from another holder of an aquaculture licence endorsed for that species, or purchase the required stock from a retail outlet.

Applicants wishing to source stock from a retail outlet will only be permitted to import stock into a biosecure land-based facility with the relevant translocation approvals sought pursuant to part 4.7 of this FOP.

C. Ministerial exemptions under section 7 of the FRMA

Aquaculture licence holders can make an application for an exemption under section 7 of the FRMA for the purpose of collecting broodstock, which is subject to the applicant providing:

1. reasons why options A and B above are not practical or viable;
2. a detailed list of coral species or genera for collection, including:
 - (a) the exact amount (in kilograms) of each species or genus to be collected; and
 - (b) documentation that demonstrates the ability to comply with Convention on International Trade in Endangered Species of wild fauna and flora (CITES) requirements;
3. defined area or areas (with GPS coordinates) for proposed collection, which:
 - (a) excludes Reef Observation Areas and sanctuary zones within marine parks;
 - (b) contains sufficient abundance of proposed target species;
4. a detailed harvest strategy, which outlines:
 - (a) how the target species will be identified;
 - (b) how the target species will be harvested; and
 - (c) a rotational harvesting plan.

The quantity of coral permitted to be collected will be assessed on a case-by-case basis and with consideration given to the Marine Aquarium Resources of Western Australia Harvest Strategy 2017-2020.

An exemption may be granted for a period of up to three years and the exemption holder may be required to provide annual reports that describe the date, GPS location, weight and species or genera of coral broodstock taken.

3.3. Location of Aquaculture Gear in Marine Farms

Consideration is to be given to location of aquaculture gear in marine farms and its effect on the environment.

Guidelines

Licences will be conditioned such that aquaculture gear in marine farms must be positioned in such a way that the aquaculture gear will not cause any damage to any reef, coral or sea grass bed.

3.4. Coral Species Identification

This subsection only refers to the aquaculture of coral and not to live rock or live sand.

The identification of coral species is difficult when compared to fish, crustaceans and molluscs. Given the significant difficulties involved in identifying coral species, the number of synonyms in taxonomy and the large number of marketing names, a clear and uniform naming system is important.

Inconsistent and unclear nomenclature creates challenges for the management and compliance activities imposed on a coral aquaculture industry. The tools and techniques used to gain certainty are not consistent with the practicalities of growing and marketing corals by industry and not appropriate for use by compliance officers of the Department.

Guidelines

The Department recognises that a less complicated identification system is needed; therefore, the taxonomy has been simplified to only refer to genera where it is not practicable to identify corals to species level.

- An applicant for an aquaculture licence or exemption to collect broodstock will only be required to identify coral to genus level when identification to species level is not practicable.

3.5. Distinguishing Between Aquaculture and Wild-Captured Coral and Live Rock

This subsection only refers to the aquaculture of coral and live rock.

With the development of a coral aquaculture industry, appropriate arrangements need to be in place to guarantee a licensed site is not used to hold illegally harvested wild coral or live rock. This will require an ability to distinguish between coral and live rock products sourced from the wild and those derived from aquaculture.

For coral, the Department will work with licence holders to develop their own method of tagging that satisfies the following criteria:

- a tag can be incorporated into the matrix of the coral, or attached to the substrate;
- a tag identifies the licence holder;
- incorporate a tag into the plug to which the coral fragment is secured; and
- provide for each tag to bear a unique and recordable form of identification that corresponds to records and production returns, identifying:
 - the date of propagation or fragmentation;

- genus or species;
- source colony tag number; and
- batch number.

Guidelines

- The Department will require aquaculture licence applicants to clearly define the proposed method of tagging or marking systems.
- The proposed method or type of substrate to be used must be specified.
- All tags must remain on the product in culture and during transport to market.
- No natural reef coral material can be used for live rock culture – rock harvested from the marine environment will not be authorised.
- Only manufactured substrate can be used for the culture of live rock.
- Manufactured live rock will not require an approved tag or marking system; however, appropriate records must be kept.

3.6. Biosecurity – Management and Environmental Monitoring Plans

Under the provisions of s.92(A) of the FRMA, an application for a coral, live rock and live sand aquaculture licence must be accompanied by a Management and Environmental Monitoring Plan (MEMP) and current licence holders are required to have prepared and lodged a MEMP with the Department.

MEMPs include provisions for environmental management, biosecurity and other matters such as public safety.

Guidelines

To ensure good animal health is maintained, licence conditions may be imposed that require the licence holder to:

- notify the Department if high or unexplained mortalities occur; and
- submit a sample to the Department for examination.

These and other similar disease conditions may be applied to protect the environment and the interests of other coral, live rock and live sand aquaculture licence holders.

3.7. Translocation

This subsection only refers to the aquaculture of coral and live rock.

The three main risks associated with the translocation of aquatic organisms are the potential for the translocated species to:

1. impact on genetic diversity;
2. introduce non-native organisms; and
3. impact on the natural environment and the biodiversity of native species.

Genetic Diversity

Where individuals are introduced to the wild from a population that is genetically distinct from the native population, there is a risk that this introduction could alter the natural genetic structure of the local population.

Introduction of non-native organisms (e.g. pests and diseases)

The translocation of coral and live rock has the ability to unintentionally introduce or spread other organisms to the area of the aquaculture operation and may impact local ecosystems. The coral and live rock may have non-native organisms attached to their surfaces or the equipment may be contaminated with non-native organisms.

Most corals show some signs of disease following chronic environmental stress or acute interference (such as taking cuttings for propagation). Given that the understanding of the pathology of coral disease is very limited and broader questions of the epidemiology of specific pathogens unknown, a considered approach to the relocation of species in open systems should be encouraged while still allowing for the reasonable development of the industry. This approach may result in only locally native species being relocated.

Impact on the natural environment and the biodiversity of native species

The translocation of aquatic organisms to a water body can affect the ecosystem either directly, through predation or competition, or indirectly, through alterations of the environment. While there are no recorded instances of feral coral populations becoming established, the introduction of unwanted non-native algae species associated with coral and live rock aquarium systems is of concern. Some species are significant fouling organisms and can be difficult to control for reasons such as resistance to antifouling treatments.

Guidelines

- In the Abrolhos Islands, only coral collected in the area may be used for aquaculture purposes. Introductions of any coral to the Abrolhos Islands will not be permitted.
- Introductions of non-native coral for aquaculture purposes will only be permitted in land-based, closed, biosecure recirculating systems.
- Any parental stock used for breeding grow-out stock within a hatchery must be native to the area of the offshore grow-out site.
- The submission of samples and health certificates may be required to manage coral diseases and responses to disease outbreaks.
- Standard translocation requirements will apply for the translocation of coral and live rock (but taking account of specific restrictions that apply to the Abrolhos Islands).
- If translocating coral and live rock from one licensed site to another, translocation approval may be required.
- Information about translocation requirements can be obtained by emailing translocation@fish.wa.gov.au.

3.8. CITES and Export Requirements

This subsection only refers to the aquaculture of coral and not to live rock or live sand.

Coral producers can generally be expected to target export markets for their products.

All hard coral species are listed on the Convention on the International Trade in Endangered Species (CITES) and require certain Commonwealth approvals prior to export. Particular requirements include:

- CITES and associated Non-Detrimental Finding (NDF) reports by the Australian CITES Scientific Committee;
- the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act); and
- the *WA Wildlife Conservation Act 1950*.

Before any hard corals can be exported, they must be taken under a Wildlife Trade Operation (WTO) issued by the Commonwealth. In October 2016, the take of coral for aquaculture broodstock purposes was, for the first time, included in the existing coral WTO for the wild stock fishery.

To maintain WTO export approval for both the MAF and the aquaculture sector, the Department must ensure that the total annual quantity of each hard coral species is within WTO and NDF limits.

Guidelines

- A licence holder should seek advice from the Commonwealth Department of the Environment and Energy (DotEE) for detailed information on export requirements.
- Any aquacultured coral from broodstock taken prior to October 2016 cannot be exported, unless otherwise approved by DotEE.
- In the assessment of coral broodstock collection exemptions, as outlined in part 3.2 of this FOP, the Department will ensure WTO and NDF conditions are met.